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Detering et al.

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[54] FAST QUENCH REACTOR METHOD

[58] Field of Search 75/10.19, 10.21,
75/399; 420/590

[75] Inventors: Brent A. Detering; Alan D. Donaldson; James R. Fincke; Peter C. Kong; Ray A. Berry, all of Idaho Falls, Id.

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[73] Assignee: Lockheed Martin Idaho Technologies Company, Idaho Falls, Id.

Primary Examiner—Melvyn Andrews

Attorney, Agent, or Firm—Thorpe North & Western

[*] Notice: This patent is subject to a terminal disclaimer.

[57] ABSTRACT

[21] Appl. No.: 09/076,922

[22] Filed: May 12, 1998

Related U.S. Application Data

[63] Continuation-in-part of application No. 08/404,395, Mar. 14, 1995, Pat. No. 5,749,937.

A fast quench reaction includes a reactor chamber having a high temperature heating means such as a plasma torch at its inlet and a means of rapidly expanding a reactant stream, such as a restrictive convergent-divergent nozzle at its outlet end. Metal halide reactants are injected into the reactor chamber. Reducing gas is added at different stages in the process to form a desired end product and prevent back reactions. The resulting heated gaseous stream is then rapidly cooled by expansion of the gaseous stream.

23 Claims, 8 Drawing Sheets

